

VERTICAL MIXED FLOW PUMP

Model: DF-V

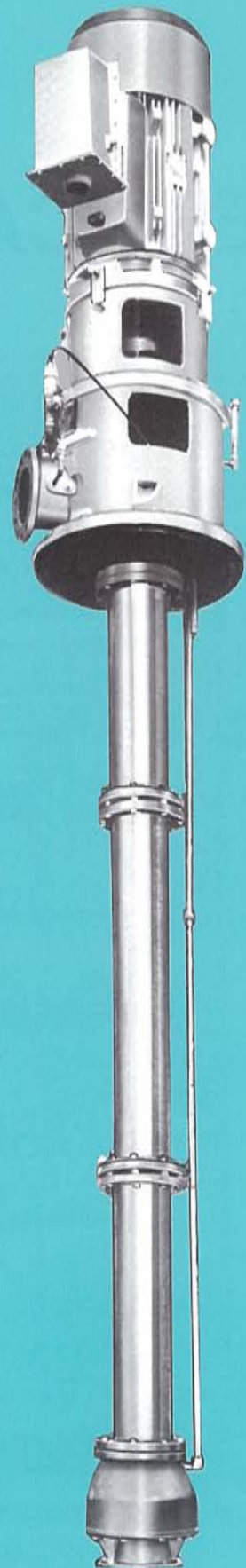


New Series of Improved Vertical

Kubota Vertical Mixed Flow Pump

Through detailed research into the discharge bowl, lifting pipe and discharge elbow utilizing technical data gained from many years of experience, Kubota has succeeded in developing a new series of pumps capable of meeting a wider range of requirements.

Kubota's new series is characterized by pumps of simple structure, light weight and ease of handling. Parts are completely interchangeable.



Mixed Flow Pumps

Features

1. The motor is installed on the discharge elbow and so the pump requires less space than for the horizontal type thereby reducing installation costs.
2. The motor is installed at a high elevation making it safe from flooding even during times of emergency.
3. Because the impeller is located in the water, the pump is free from cavitation and can lift water from deep wells, something which is not possible with a horizontal pump.
4. Because the impeller is submerged, priming devices such as a vacuum pump are not required. Automatic operation is, therefore, very simple.
5. The pump has a rising characteristic (H vs. Q) from run out flow to no-flow condition and can lift water even when the head fluctuates. Pump operation is very quiet over a wide range of flows.
6. Unlike for axial flow pumps, shut-off operation is possible at start-up.
7. Kubota's new series of vertical mixed flow pumps have the following advantages.
 - a) Structures and materials to best suit a variety of different fluids.
 - b) Improved efficiency and reliability.
 - c) Easy maintenance because of simple structure and interchangeability of parts.
 - d) Readily available spare parts.

Standard materials

No.	Class Parts	1	2	3	4	5	6
212	Suction bell	FC200	FC200	FC200	FC200	2% NiFC	SCS13
207	Discharge bowl	FC200	FC200	FC200	FC200	2% NiFC	SCS13
301	Bearing spider	FC200	FC200	FC200	FC200 or 2% NiFC	2% NiFC or D2	SCS13
209	Lifting pipe	SS400	SS400	FC200	FC200	2% NiFC	SUS304
204	Discharge casing	SS400 or FC200	SS400 or FC200	FC200	FC200	2% NiFC	SUS304+SS400
208	Discharge elbow	—	—	FC200	FC200	2% NiFC	—
230	Impeller	CAC402	CAC402	SCS13	SCS13	SCS13	SCS14
283	Casing ring	CAC406	CAC406	SUS403 or SUS304	SUS304	SUS316	SUS316
240	Pump shaft	S45C	SUS403	SUS403 or SUS304	SUS304 or SUS316	SUS316	SUS316L
244	Intermediate coupling	CAC702	CAC702	CAC702	CAC702	CAC702	CAC702
251	Packing sleeve	SUS403 or SCS2	SUS403 or SCS2	SUS304 or SCS13	SUS316 or SCS14	SUS316 or SCS14	SUS316L or SCS16
252	Bearing sleeve	CAC406	SUS403 or SCS2	SUS304 or SCS13	SUS316 or SCS14	SUS316 or SCS14	SUS316L or SCS16
261	Impeller nut	CAC502A	CAC502A	CAC502A or SCS13	SCS13	SCS14	SCS16
300	Submerged bearing	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber
302	Shaft enclosing tube	SGPW	SGPW or SUS304	SUS304	SUS304 or SCS316	SUS316L	SUS316L
305	Frame	—	—	SS400	SS400	SS400	SS400
309	Bearing box	FC200	FC200	FC200	FC200	FC200	FC200
328	Bearing						
284	Stuffing box	FC200	FC200	FC200	FC200 or 2% NiFC	2% NiFC or D2	D2 or SCS13
304	Driver pedestal	SS400	SS400	SS400	SS400	SS400	SS400
606	Sole plate	SS400	FC200	FC200	FC200	FC200	FC200
608	Cupling	FC200	FC200	FC200	FC200	FC200	FC200
Use	Standard liquid	Fresh water		Sewage water		Sea water	
	River water	○	○	○			
	Rain water	○	○	○			
	Agricultural water	○	○	○			
	Industrial water		○	○	○		
	Sewerage			○	○		
	Sea water				○	○	○

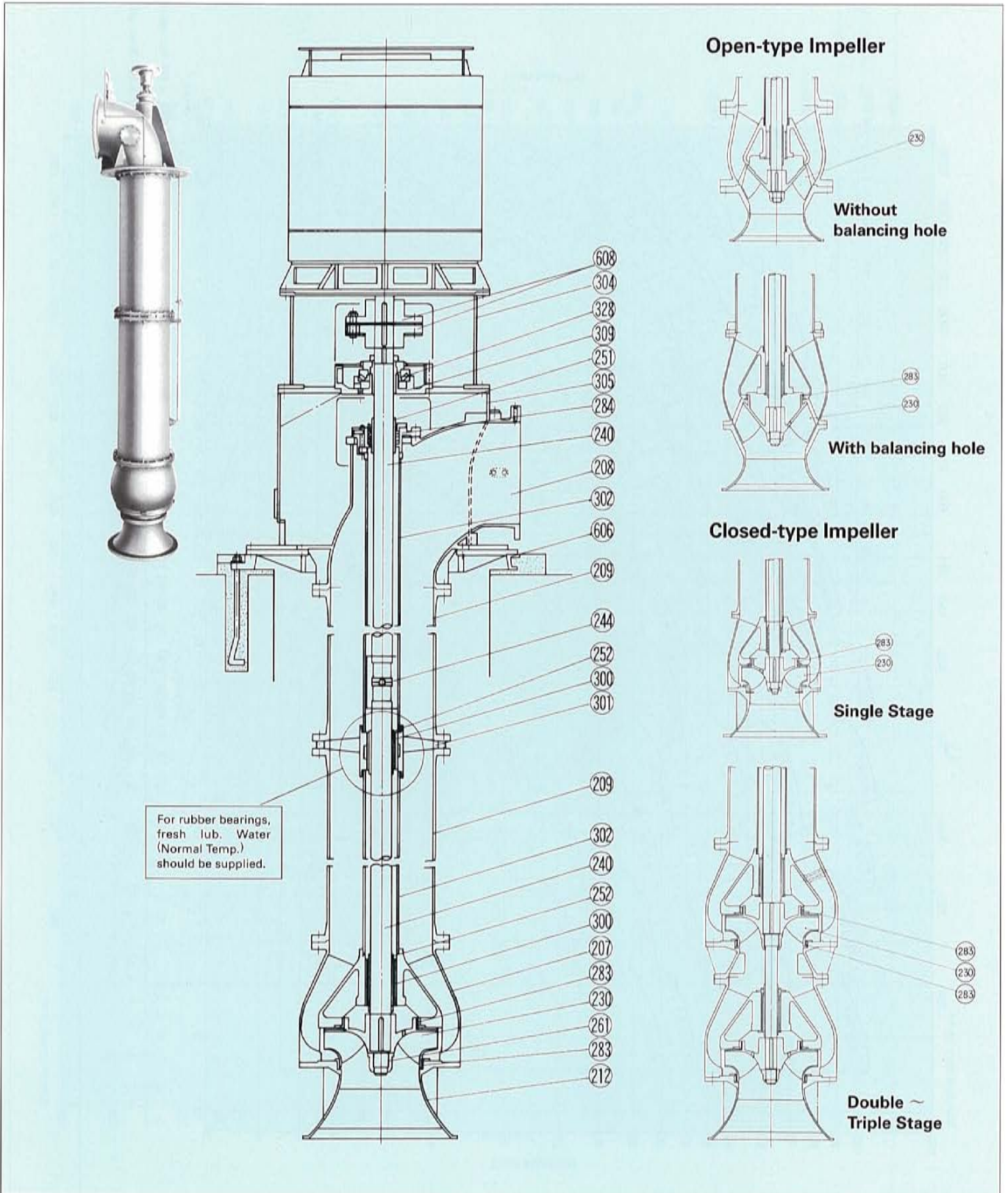
Material Comparison Tables JIS and ASTM

JIS	ASTM	JIS	ASTM	JIS	ASTM
FC200	A48 NO.30A	SUS14	A296, A351 CF8M	SUS316L	A473 316L
SCS13	A296, A351, CF8, A283	CAC406	B584, C83600	CAC702	B148 954
SS400	A283 Grade D	SUS403	A473 403	SCS2	A296, A351 CA40
SUS304	A473 304	SUS316	A473 316	SCS16	A296, A351 CF3M
CAC402	B584, C90300	S45C	A29, A322 1045	SGPW	A120 Hot-dipped Galvanized Steel Pipe

Standard structure

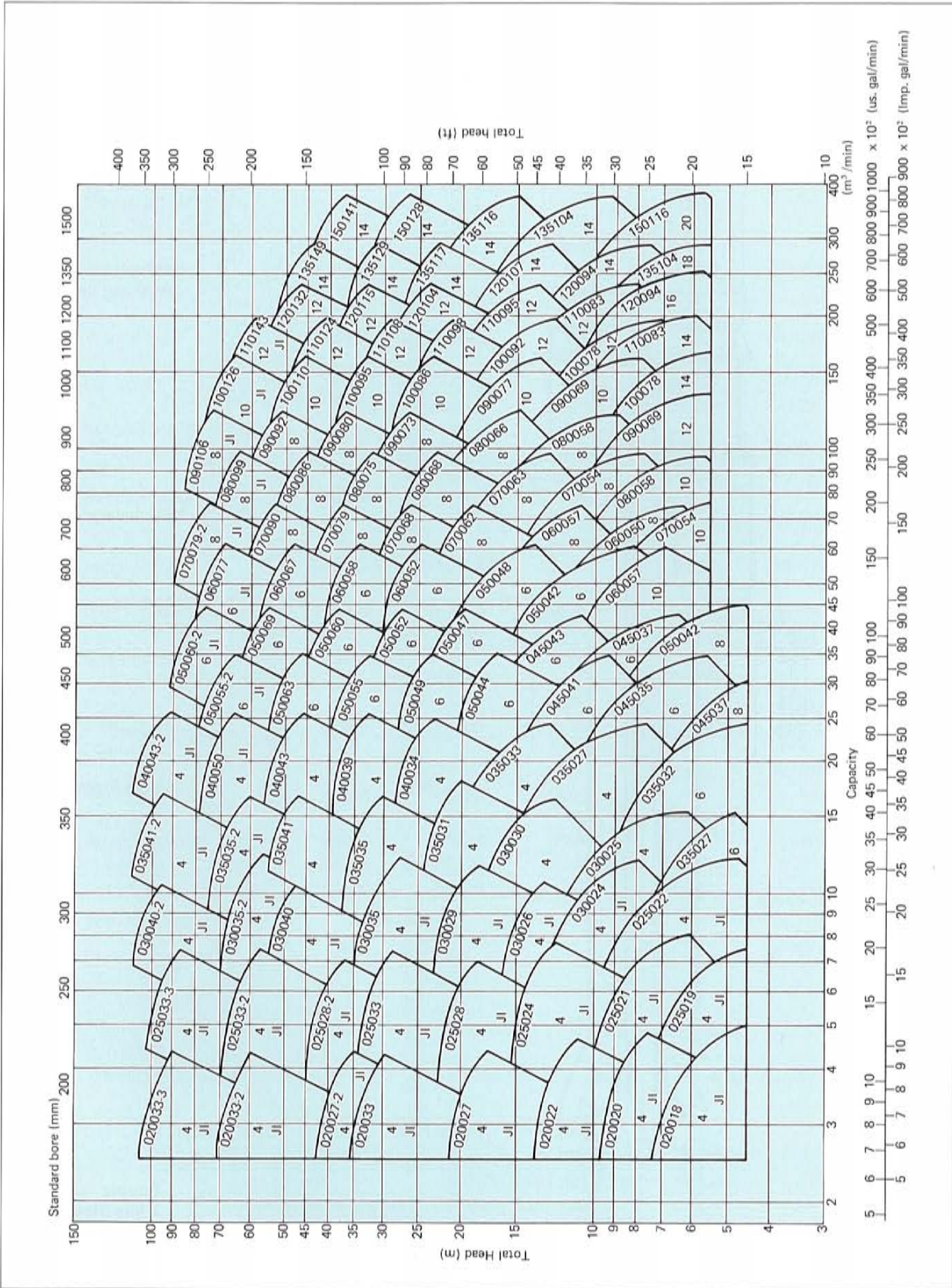
Kubota Vertical Mixed Flow Pumps are assembled with standard parts.

1. A standard motor can be used since pump axial thrust is carried by bearings on the pump side.
If required, axial thrust can be carried by the motor.
2. A pump with oil lubricated intermediate bearings and a pump having no protective tube are available.
3. The pump floor can be water sealed.



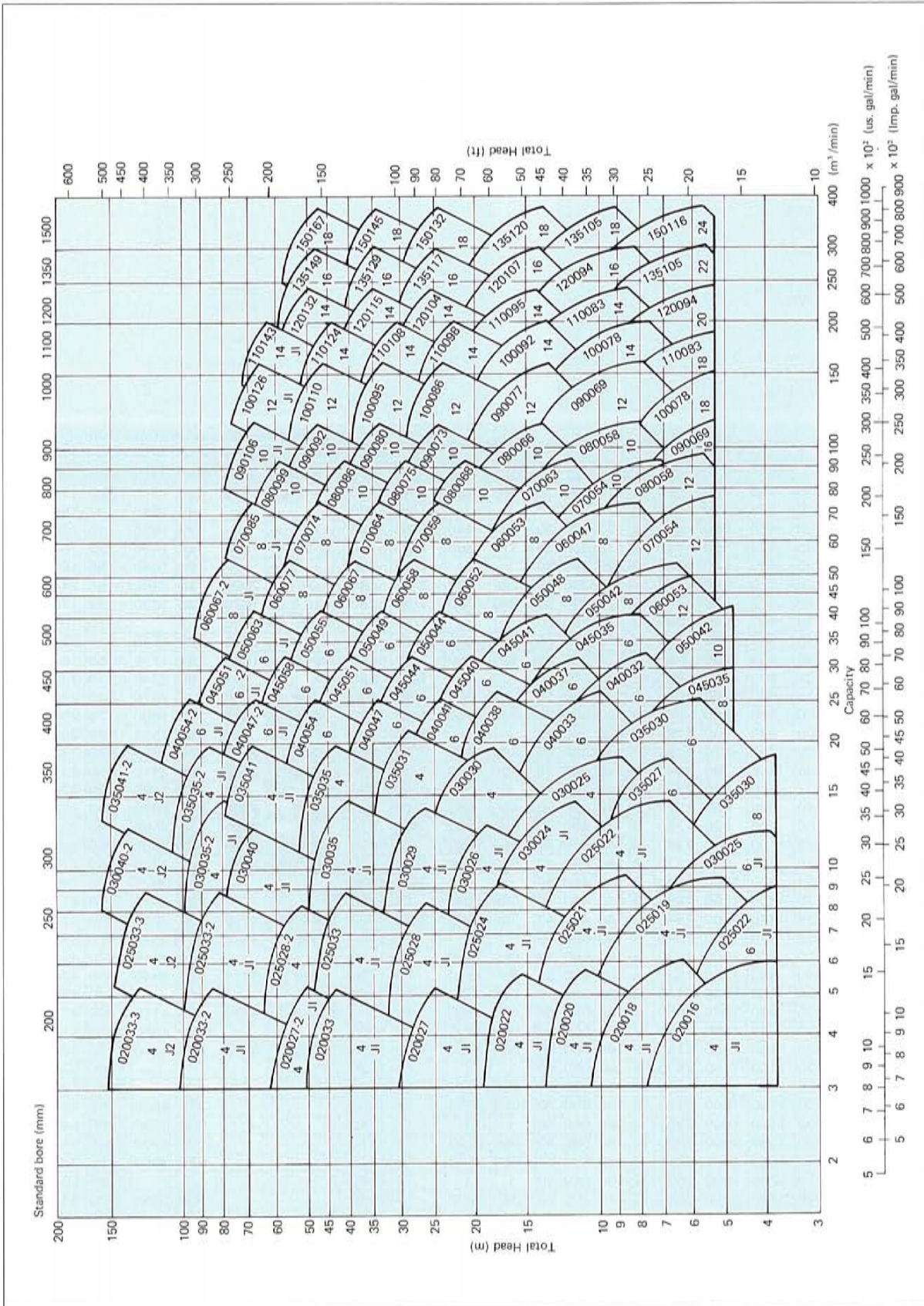
Performance curves 50Hz

Note: 1. Denominators
 Bowl Type No.; No. of stages
 4 → No. of poles
 J1 → Standard of discharge flange
 J1 ... JIS10K F.F. J2 ... JIS20K F.F.
 No indication ... JWWA standard F.F.
 2. This table may be changed without notice.



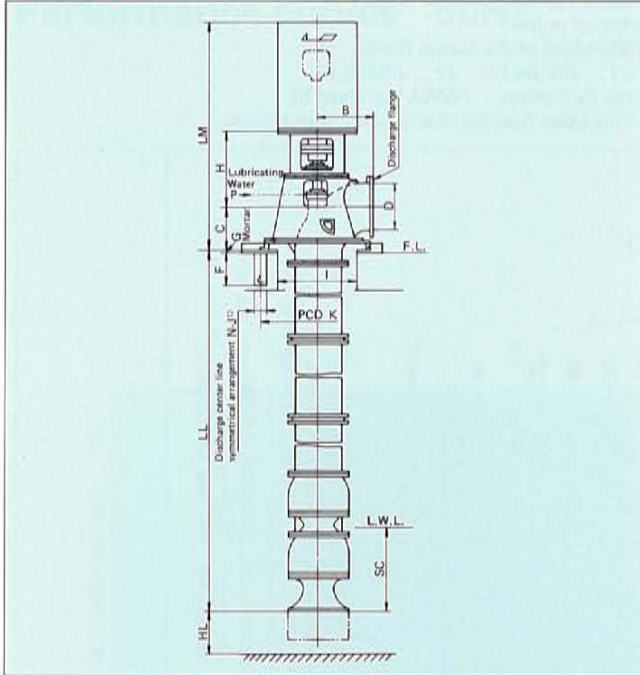
Performance curves 60Hz

Note: 1. Denominators
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 J1 ... JIS10K F.F. J2 ... JIS20K F.F.
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Dimensions

50Hz



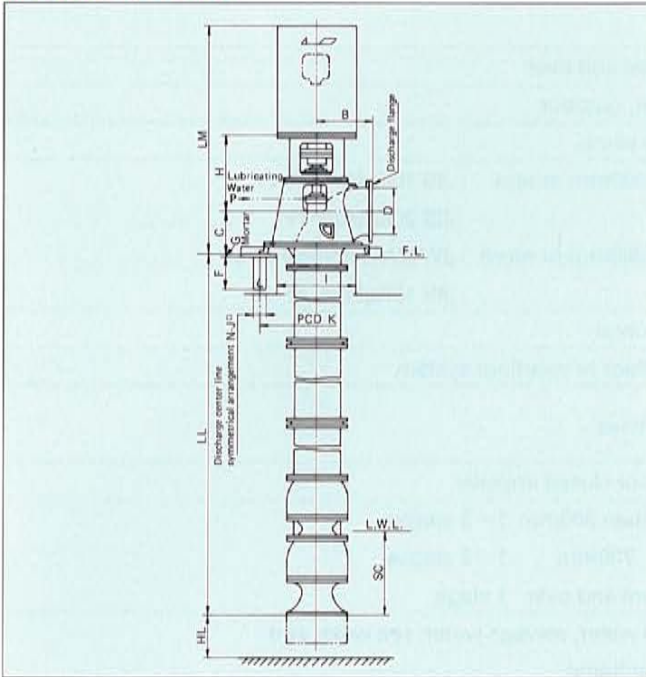
Note:

1. For the dimensions of the discharge flange, refer to the appropriate standards.
2. The above floor dimensions are those for a motor which matches the maximum to minimum bowl types.
3. Some parts of the external dimensions of the pump are subject to changes according to the type of motor.
Before making foundations, please request a drawing for approval.

Bowl types	External and foundation dimensions										Reference dimensions				Above floor dimensions (approximate) with completely-closed cage-type motor						No. of Poles
	D	C	B	I	K	N	J	F	G	HL	SC	P	H	KW	LM	KW	LM	KW	LM		
Minimum to maximum																					
020018~020027	200	230	350	450	660	6	110	300	30	260	480	3/8B	650	7.5	1325	11	1370	18.5	1420		
020033~020027-2	200	230	400	520	780	6	120	360	30	{	{	1/2B	700			30	1580	37	1600	4	
020033~020033-3	200	280	450	550	880	6	120	360	30	220	440	1/2B	800			75	1925	110	2285		
025019~025024	250	260	370	500	710	6	110	300	30	310	580	1/2B	700	11	1450	15	1490	22	1540		
025028~025033	250	260	400	540	780	6	120	360	30	{	{	1/2B	730			30	1640	55	1690	4	
025028~025033-3	250	300	470	550	880	6	120	360	30	280	550	3/4B	820	75	2005	110	2285	150	2440		
025022~030026	300	300	400	540	780	6	120	360	30	380	730	1/2B	730	18.5	1570	30	1680	37	1700		
030029~030035	300	310	450	580	880	6	120	360	30	{	{	1/2B	800	55	1810			75	1995	4	
030040~030040-2	300	330	500	650	980	8	120	360	30	330	650	3/4B	880	110	2375	160	2530	224	2585		
035027~030030	350	335	450	580	880	6	120	360	30	400	800	1/2B	770	22×6P	1685	37	1775	55	1805		
035031~035035	350	335	500	650	980	8	120	360	30	{	{	1/2B	820			90	2240	110	2320	4	
035041~035041-2	350	375	600	700	1080	8	120	360	30	370	760	3/4B	920	180	2530	224	2670	345	2765		
035032~035033	400	360	500	680	980	8	120	360	30	500	890	1/2B	820	30×6P	1875	55	1880	75	2065		
040034~040039	400	400	630	750	1080	8	120	360	30	{	{	3/4B	900			132	2535	190	2625	4	
040043~040043-2	400	400	630	870	1220	8	140	460	40	450	850	3/4B	980	265	2755	375	2850	530	3380		
045037~045041	450	405	550	720	1080	8	120	360	30	550	1000	1/2B	830	37×8P	2120	55	2310	75	2310		
050044~050049	450	427	650	820	1220	8	140	460	40	{	{	3/4B	940			132	2690	180	2740	6	
050055~050055-2	450	440	650	980	1370	8	140	460	40	460	950	3/4B	990	250	2900	335	2930	500	3530		
050042~050047	500	450	600	820	1220	8	140	460	40	600	1100	3/4B	870	75	2395	110	2555	190	2695	6	
050052~050060-2	500	480	700	980	1370	8	140	460	40	500	1050	1B	1020	265	2970	530	3600	750	3600		
060057~050048	600	510	700	980	1370	8	140	460	40	650	1300	3/4B	900	110×10P	2785	140	2785	200	2785		
060052~060058	600	554	800	1000	1540	8	140	460	40	{	{	3/4B	1000			315	3025	450	3655	6	
060067~060077	600	570	800	1200	1690	8	140	460	40	580	1240	1B	1250			630	2920	900	4120		
070054~060057	700	634	870	1000	1540	8	140	460	40	700	1500	3/4B	1000	110×10P	3010	132	3010	200	3105		
070062~070079	700	650	870	1200	1690	8	140	460	40	{	{	1B	1160	300	3810	425	3810	600	3960	8	
070090~070079-2	700	650	870	1300	1930	8	180	560	50	650	1450	1B	1310			850	4310	1220	4660		
080058~080086	800	740	950	1350	1930	8	180	560	50	850	1800	1B	1200	210	3410	475	3940	950	4340		
- 080099	800	750	950	1500	2140	8	180	560	50	700	1600	1B	1300					1320	4850	8	
090069~090080	900	810	980	1350	1930	8	180	560	50	800	1800	1B	1300	200×12P	4110	425	4110	950	4510	8	
090092~090106	900	820	980	1580	2140	8	180	560	50	800	1800	1B	1340			1320	4960	1900	5160		
100078~100095	1000	920	1150	1580	2140	8	180	560	50	980	2080	1B	1350	355	4320	800	4770	1120	5070		
- 100110	1000	920	1150	1750	2350	8	180	560	50	{	{	1B	1420					1600	5340	10	
- 100126	1000	930	1150	1900	2600	10	180	560	50	880	1980	1B	1520					2240	6250		
110083~100092	1100	1000	1150	1600	2140	8	180	560	50	1000	2350	1B	1400			375	4600	600	4900		
110098~110108	1100	1000	1150	1800	2350	8	180	560	50	{	{	1B	1460			880	5260	1200	5460	12	
110124~110143	1100	1010	1150	2000	2600	10	180	560	50	950	2200	1B	1570			1700	6330	2430	6180		
120094~110095	1200	1060	1250	1800	2350	8	180	560	50	1650	2500	1B	1470			530	4880	750	5330		
- 120104	1200	1070	1250	1900	2600	10	180	560	50	{	{	1B	1540					1180	5610	12	
120115~120132	1200	1070	1250	2100	2880	10	210	700	60	1360	2200	1B	1640			1600	6460	2300	6310		
135104~135129	1350	1200	1380	1950	2600	10	180	560	50	1200	2500	1B	1770	600	6020	1360	6470	1900	6770	14	
- 135149	1350	1200	1380	2200	2880	10	210	700	60	1100	2400	1B	1820					2650	6770		
150116~135116	1500	1280	1530	2300	2880	10	210	700	60	1300	3000	1B	1720			950	6300	1320	6500	14	
150128~150141	1500	1290	1530	2500	3150	10	210	700	60	1200	2850	1B	1810			2120	6850	2900	6850		

Dimensions

60Hz



Note:

1. For the dimensions of the discharge flange, refer to the appropriate standards.
2. The above floor dimensions are those for a motor which matches the maximum to minimum bowl types.
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Minimum to maximum																						
020016~020027	200	230	350	450	660	6	110	300	30	260	480	3/8B	660	7.5	1350	15	1450	37	1550			4
020033~020027-2	200	230	400	520	780	6	120	360	30			1/2B	720	45	1650	55	1650	75	1850			
020033-2~020033-3	200	280	450	550	880	6	120	360	30	220	440	1/2B	820	90	2150	110	2250	180	2450			
025022~025024	250	260	370	500	710	6	110	300	30	310	580	1/2B	710	11×6P	1500	22	1550	37	1650			4
025028~025033	250	260	400	540	780	6	120	360	30			1/2B	750	55	1650	75	1850	90	2050			
025028-2~025033-3	250	300	470	550	880	6	120	360	30	280	550	3/4B	840	110	2300	180	2450	265	2500			
030025~030026	300	300	400	540	780	6	120	360	30	380	730	1/2B	735	18.5×6P	1700	45	1700	55	1700			4
030029~030035	300	310	450	580	880	6	120	360	30			1/2B	805	75	2000	110	2300	132	2300			
030040~030040-2	300	330	500	650	980	8	120	360	30	330	650	3/4B	900	190	2600	265	2600	400	2700			
035030~030030	350	335	450	580	880	6	120	360	30	400	800	1/2B	780	37×6P	1800	55	1800	90	2150			
035031~035035	350	335	500	650	980	8	120	360	30			1/2B	820	110	2300	140	2350	190	2500			4
035041~035041-2	350	375	600	700	1080	8	120	360	30	370	760	3/4B	940	300	2650	400	2750	600	2800			
035030~040038	400	360	500	680	980	8	120	360	30	500	890	1/2B	820	45	2050	75	2200	110	2400			
040041~040047	400	400	630	750	1080	8	120	360	30			3/4B	900			140	2500	190	2700			6
040054~040054-2	400	400	630	870	1220	8	140	460	40	450	850	3/4B	980	280	2750	375	2850	560	3350			
045035~045040	450	405	550	720	1080	8	120	360	30	550	1000	3/4B	840	45×8P	1300	90	2400	150	2450			
045044~045051	450	427	650	820	1220	8	140	460	40			3/4B	950			200	2700	280	2750			6
045058~045051-2	450	440	650	980	1370	8	140	460	40	460	950	3/4B	990			400	3050 ~3450	560	3550			
050042~050044	500	450	600	820	1220	8	140	460	40	600	1100	3/4B	870	90	2450	132	2550	224	2650			
050049~050063	500	480	700	980	1370	8	140	460	40	500	1050	3/4B	1020	300	3000	425	3200 ~3500	630	3600			6
060053~050048	600	510	700	980	1370	8	140	460	40	650	1300	3/4B	890	75×12P	2600	110	2700	150	2800			
060052~060058	600	554	800	1000	1540	8	140	460	40			3/4B	990	185	2900	250	3000	335	3550			8
060067~060067-2	600	570	800	1200	1690	8	140	460	40	580	1240	1B	1200	475	3750	670	3900	950	4100			
070054~060053	700	634	870	1000	1540	8	140	460	40	700	1500	3/4B	980	110×12P	3000	180	3000	250	2800 ~3050			8
070059~070074	700	650	870	1200	1690	8	140	460	40			1B	1140	400	3750	560	3750	750	3950			
- 070085	700	650	870	1300	1930	8	180	560	50	650	1450	1B	1280	800	4100	950	4250	1090	4350			
080058~080086	800	740	950	1350	1930	8	180	560	50	850	1800	1B	1200	150×12P	3300	280	3850	850	4350			10
- 080099	800	750	950	1500	2140	8	180	560	50	700	1600	1B	1310					1180	4850			
090069~090080	900	810	980	1350	1930	8	180	560	50	800	1800	1B	1300	265	4100	375	4100	850	4600			10
090092~090106	900	820	980	1580	2140	8	180	560	50	800	1800	1B	1340			1180	4750	1650	5150			
100078~100095	1000	920	1150	1580	2140	8	180	560	50	980	2080	1B	1350	355	4350	500	4600	1120	5250			
- 100110	1000	920	1150	1750	2350	8	180	560	50			1B	1420			1320	5300	1600	5800			12
- 100126	1000	930	1150	1900	2600	10	180	560	50	880	1980	1B	1520			1800	6150	2240	6050			
110083~100092	1100	1000	1150	1600	2140	8	180	560	50	1000	2350	1B	1400			425	5000	630	5400			
110098~110108	1100	1000	1150	1800	2350	8	180	560	50			1B	1450			950	5750	1320	5800			14
110124~110143	1100	1010	1150	2000	2600	10	180	560	50	950	2200	1B	1540			1850	6300	2650	6400			
120094~110095	1200	1060	1250	1800	2350	8	180	560	50	1650	2500	1B	1470	400	5050	560	5450	800	5650			
- 120104	1200	1070	1250	1900	2600	10	180	560	50			1B	1540			1000	6050	1320	6200			14
120115~120132	1200	1070	1250	2100	2880	10	210	700	60	1360	2200	1B	1640			1750	6300	2500	6450			
135105~135129	1350	1200	1380	1950	2600	10	180	560	50	1200	2500	1B	1780	670	6300	1000	6600	2180	6600			16
- 135149	1350	1200	1380	2200	2880	10	210	700	60	1100	2400	1-1/4B	1830			2360	6650	3070	7000			
150116~150132	1500	1280	1530	2300	2880	10	210	700	60	1300	3000	1B	1740	850	6500	1250	6850	1950	6850			18
150145~150167	1500	1290	1530	2500	3150	10	210	700	60	1200	2850	1-1/4B	1840			2650	7250	3750	7650			

Standard specification

Bore	200mm and over
Installation place	Indoor, outdoor
Pump location	In the sump
Connecting flange	Bore 300mm or less : JIS 10Kgf/cm ² FF or JIS 20Kgf/cm ² FF Bore 350mm or more : JWWA Standard FF or JIS 10Kgf/cm ² FF
Direction of discharge	Horizontal
Method of installation	One-floor or two-floor system
Pump rotation direction (As viewed from driven end)	Clockwise
Impeller-system	Open or closed impeller
Number of stages	Less than 300mm 1~ 3 stages 300 – 700mm 1~ 2 stages 800mm and over 1 stage
Fluid	Fresh water, sewage water, sea water and similar liquid
Temperature	Temperature of liquid : 0 ~ 65°C Atmospheric temperature : -20°C ~ 40°C Anti-freeze treatment is required for use at temperatures below 0°C.
Support method for pump axial thrust	On pump or on driver
Lubrication	Submerged bearing is water lubricated Thrust bearing is oil bath lubricated
Shaft sealing	Gland packing

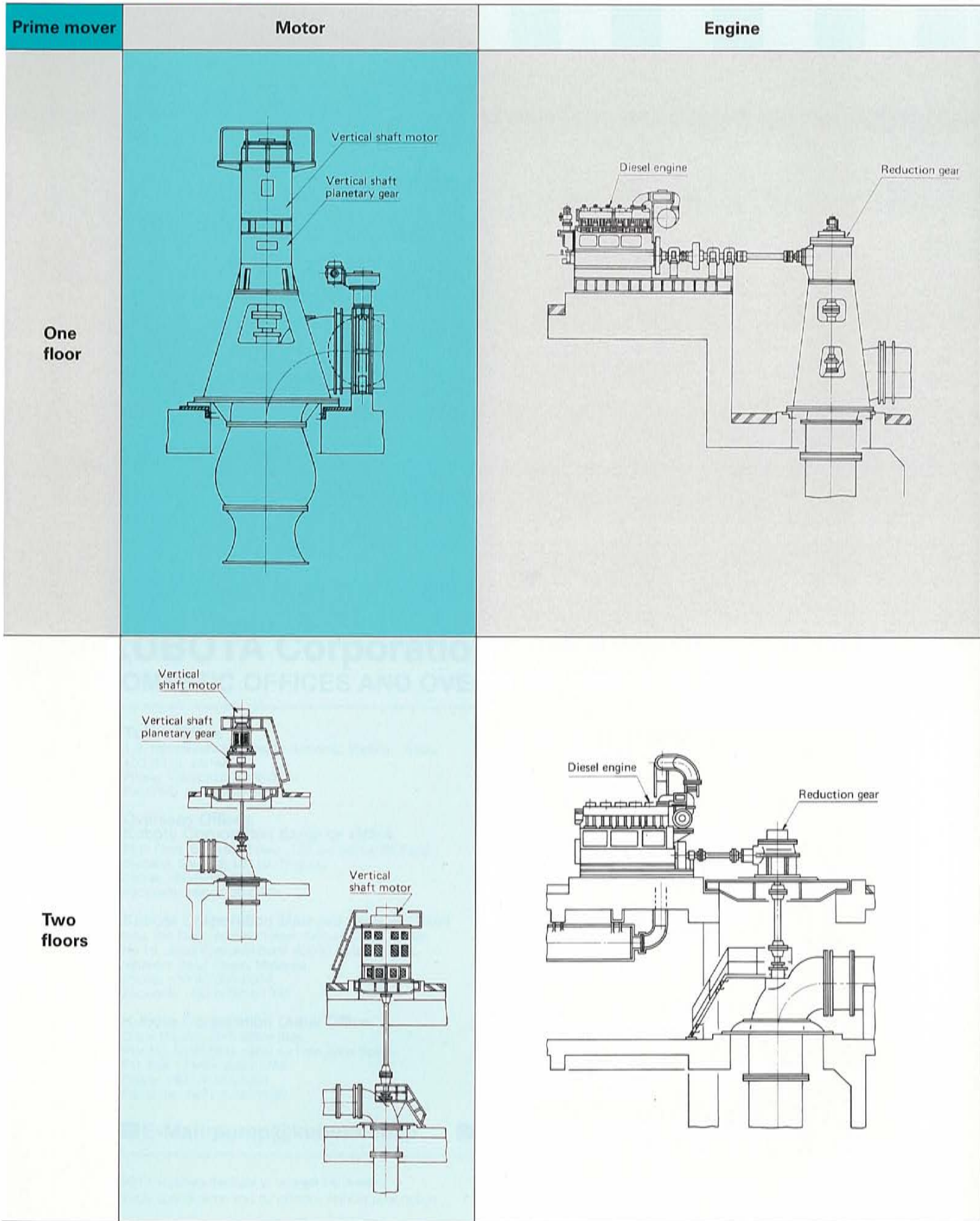
Standard attachments

1. Coupling	1 set
2. Sole plate	1
3. Foundation bolts & nuts	1 set
4. Gland drain pipe	1 set

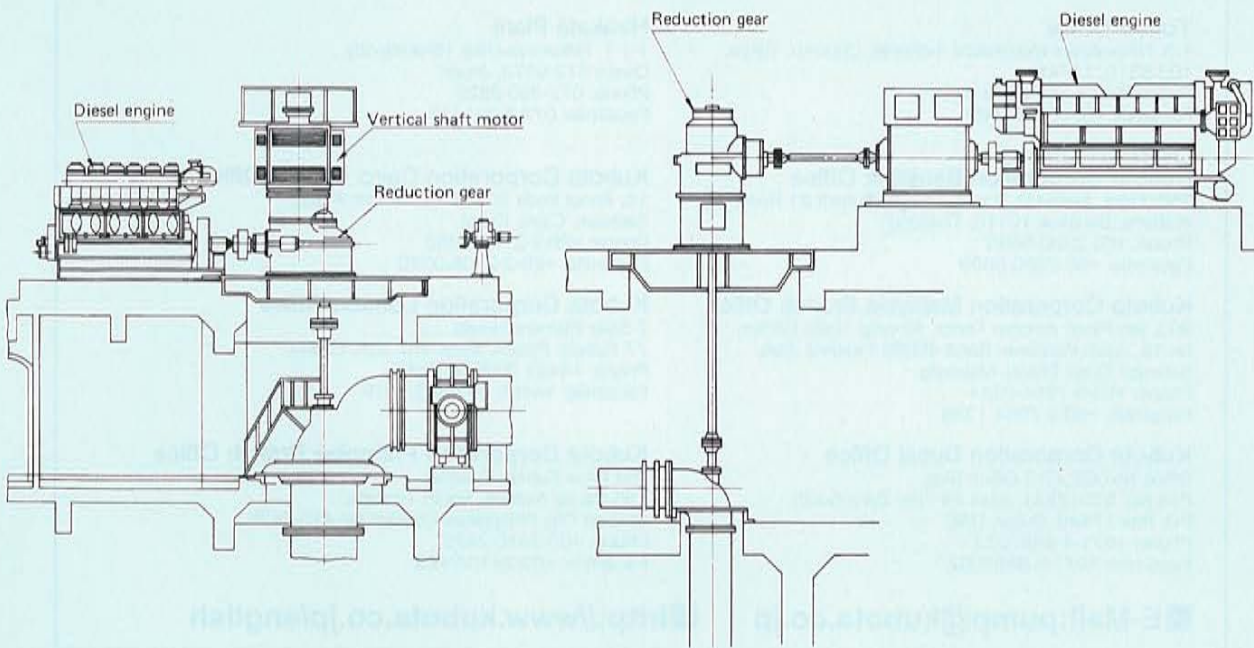
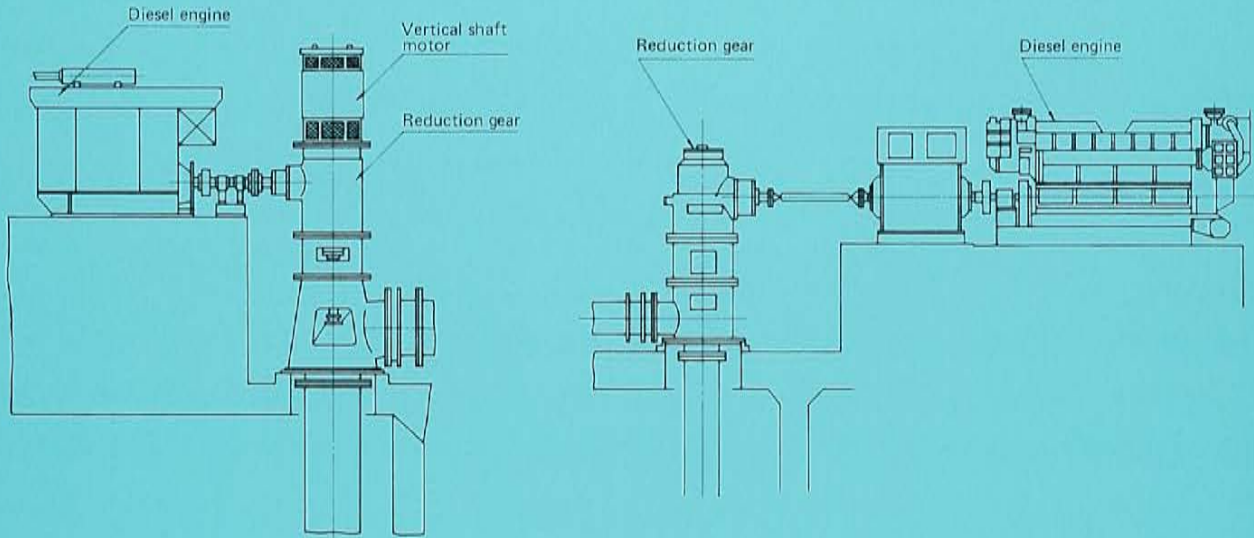
The following attachments are also available on request.

Compound gauge (with cock, conduit), automatic air release valve, suction strainer, intermediate bearing lubricating devices (solenoid valve, flow switch, strainer, stop valve, etc.) disassembling tools and tool box, companion flange to discharge flange.

Pump driving method



Motor & Engine



KUBOTA Corporation

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